

ABSTRACT

Statement of problem:

Acrylic resin is used for fabrication of various dental prostheses like removable partial dentures, complete dentures, tooth-supported/ implant retained over dentures. Rough surfaces of denture base resins promote adhesion of microorganisms and plaque formation. A well-polished prosthesis reduces the surface roughness and helps in better maintenance of oral health by reducing the accumulation of pathogenic bacteria and food debris. It is therefore important to know how different polishing agents affect the surface roughness of denture base acrylic resins and so the present invitro study was conducted to evaluate the effect of three different polishing agents on the surface roughness of heat cure denture base acrylic resins processed by two different molding techniques.

Purpose of the study:

The purpose of this in vitro study was to compare the polished surfaces of compression molded and injection molded heat polymerized acrylic denture base resins polished with different commercially available polishing agents.

Materials and methods:

A total of 120 specimens (50mm × 3mm) were fabricated by compression and injection molding technique and were subjected to lathe mounted tungsten carbide bur, carborundum paper of grit size upto 600 and rubber points to remove nodules and surface irregularities, followed by polishing with various protocols. The specimens were divided into a total of 3 groups per molding technique; control (pumice), pumice with universal polishing paste and pumice with rouge based on the polishing protocols advocated. Surface roughness was evaluated using profilometer. One way ANOVA and Tukey HSD tests were used to analyze the data statistically.

Results:

In compression moulding technique, control group had the highest mean surface roughness value. ANOVA test showed that there was no statistically significant difference between the means of the three groups i.e. $P > 0.05(0.398)$. In injection moulding technique the mean surface roughness values obtained was highest for control group, followed by rouge and universal polishing paste. Analysis of variance test showed that the mean surface roughness of injection molding technique obtained using three different polishing materials were statistically different. i.e. $p < 0.05(0.0001)$. Independent “t” test showed that the surface roughness obtained using the three different polishing materials was higher in compression moulding technique than injection moulding technique. However, there was no statistically significant difference between the mean values obtained when pumice paste was used for polishing.

Conclusion:

It was concluded that the compression molding technique produce highest mean surface roughness than the injection molding technique. Conventional polishing using pumice and universal polishing paste produce smoothest surface in both compression and injection moulding technique.

Key words:

Compression molded, injection molded, surface roughness, polishing agents, pumice, universal polishing paste, rouge, profilometer